

What is claimed is:

1. A control system for a rotation transmission device, comprising a rotation transmission device comprising a roller clutch unit including an inner member, an outer ring and rollers as engaging elements disposed between said inner member and said outer ring for selectively transmitting torque of a rotary shaft, and an electromagnetic clutch unit including an electromagnetic coil for selectively engaging and disengaging said roller clutch unit by electromagnetic force produced by said electromagnetic coil; a variable setting unit for variably applying current to said electromagnetic coil corresponding to the relative speed between said inner member and said outer ring when said roller clutch unit engages; and a control unit for controlling said variable setting unit.
2. The control system of claim 1 wherein said variable setting unit applies a current that is greater than a reference current necessary to keep said roller clutch unit engaged by a factor of n which is greater than 1 to said electromagnetic coil, and applies said reference current to said electromagnetic coil after said roller clutch unit has engaged, said variable setting unit being configured to adjust said reference current and the value of n according to said relative speed.
3. The control system of claim 1 or 2 wherein after said roller clutch unit has engaged, current is intermittently applied to said electromagnetic coil according to said relative speed.
4. The control system of any of claims 1 or 2 wherein said electromagnetic coil is divided into two portions by connecting a central line to a central portion of said electromagnetic coil, and wherein a switch is provided downstream of said variable setting unit, said switch being

operable to effect a change-over between a drive mode in which electric power is applied to said electromagnetic coil through a power supply line and a heating mode in which electric power is applied to said electromagnetic coil through said central line to produce magnetic fluxes from said two portions of said electromagnetic coil that cancel each other.

5. A rotation transmission device comprising a roller clutch unit including an inner member, an outer ring and rollers as engaging elements disposed between said inner member and said outer ring for selectively transmitting torque of a rotary shaft, and an electromagnetic clutch unit including an electromagnetic coil for selectively engaging and disengaging said roller clutch unit by electromagnetic force produced by said electromagnetic coil, wherein when said roller clutch unit engages, a rated current corresponding to a rated revolving speed which is approximately a revolving speed of said rotary shaft when said electromagnetic coil is activated most frequently is applied to said electromagnetic coil, and wherein when said roller clutch unit engages, electric power is applied to said electromagnetic coil according to the relative speed between said inner member and said outer ring so that said roller clutch is engageable by a current corresponding to the revolving speed.

6. The rotation transmission device of claim 5 wherein said inner member is mounted on said rotary shaft, wherein said outer ring is coaxially and rotatably mounted around said inner member, wherein a plurality of cam surfaces and a raceway are formed on one and the other of an outer periphery of said inner member and an inner periphery of said outer ring, respectively, wherein a retainer is disposed between said outer periphery and said inner periphery and is formed with as many pockets as said cam surfaces, wherein each of said rollers is received in one of said

pockets, wherein said electromagnetic clutch unit comprises a rotor mounted to the member formed with said raceway, an armature provided on one side of said rotor, said electromagnetic coil being provided on an opposite side of said rotor, an elastic member biasing said armature and said rotor away from each other, said armature being rotationally fixed to but axially movable relative to said retainer, and wherein said retainer and the member formed with said cam surfaces being joined together through a neutral position retaining member biasing said retainer toward a neutral position where said roller clutch unit is not engaged by said rollers.

7. The rotation transmission device of claim 5 or 6 wherein said electromagnetic coil is divided into two portions by connecting a central line to a central portion of said electromagnetic coil, and wherein said electromagnetic coil is selectively changed over between a drive mode in which electric power is applied to both ends of said electromagnetic coil to produce attraction force from said electromagnetic coil and a heating mode in which electric power is applied to said electromagnetic coil through said central line apply currents that are opposite in direction to each other to said two portions of said coil, respectively, thereby producing magnetic fluxes from said two portions of said electromagnetic coil that cancel each other.

8. The rotation transmission device of claim 6 wherein said cam surfaces are formed on an outer periphery of a large-diameter portion of said inner member, wherein a raceway is a cylindrical surface formed on the inner periphery of said outer ring, said cam surfaces and said cylindrical surface defining wedge-shaped spaces therebetween, said electromagnetic clutch unit including a rotor guide through which said rotor is coupled to said outer ring, said rotor guide being a nonmagnetic

cover provided separately from said outer ring, wherein a protrusion is formed on one of opposed end surfaces of said outer ring and said cover and is engaged in a cutout formed in the other of said opposed end surfaces, and wherein a coupling means is provided radially inwardly of the portion where said protrusion engages in said cutout for axially inseparably coupling said cover to said outer ring.

9. The rotation transmission device of claim 8 wherein said coupling means comprises ring grooves formed in the inner periphery of said outer ring at an open end thereof and an inner periphery of said protrusion, and a radially elastically deformable snap ring engaged in said ring grooves.

10. The rotation transmission device of claim 8 or 9 wherein a discharge hole for lubricating oil is defined between axially opposed end surfaces of said cutout and said protrusion.

11. The rotation transmission device of any of claims 8 to 10 wherein arcuate slits defining a circle are formed in a surface of said rotor opposed to and adapted to be attracted to said armature, and wherein nonmagnetic elastic members are each received in one of said slits so as to protrude from said surface of said rotor.

12. The rotation transmission device of any of claims 8 to 11 wherein a seal means is provided radially inwardly of said rotor.

13. The rotation transmission device of any of claims 8 to 12 wherein said retainer has its inner periphery supported at its end on an outer periphery of a snap ring engaged in a ring groove formed in the outer periphery of said input member.

14. The rotation transmission device of any of claims 8 to 13 wherein a recess is formed in an end surface of said large-diameter portion of said inner member, wherein a ring groove is formed in a radially inner surface of

a radially outer wall of said recess, and wherein a switch spring is mounted in said ring groove.

15. The rotation transmission device of any of claims 8 to 14 wherein said outer ring is rotatably supported on said inner member through a bearing fitted in a bearing fitting surface formed on the inner periphery of said outer ring, said bearing fitting surface having the same diameter as said cylindrical surface.